D-006-DOT. AC Heater Vin=100Vac (Equipped with DOT-247 Package)

2026. May.
69UG014E Rev.001

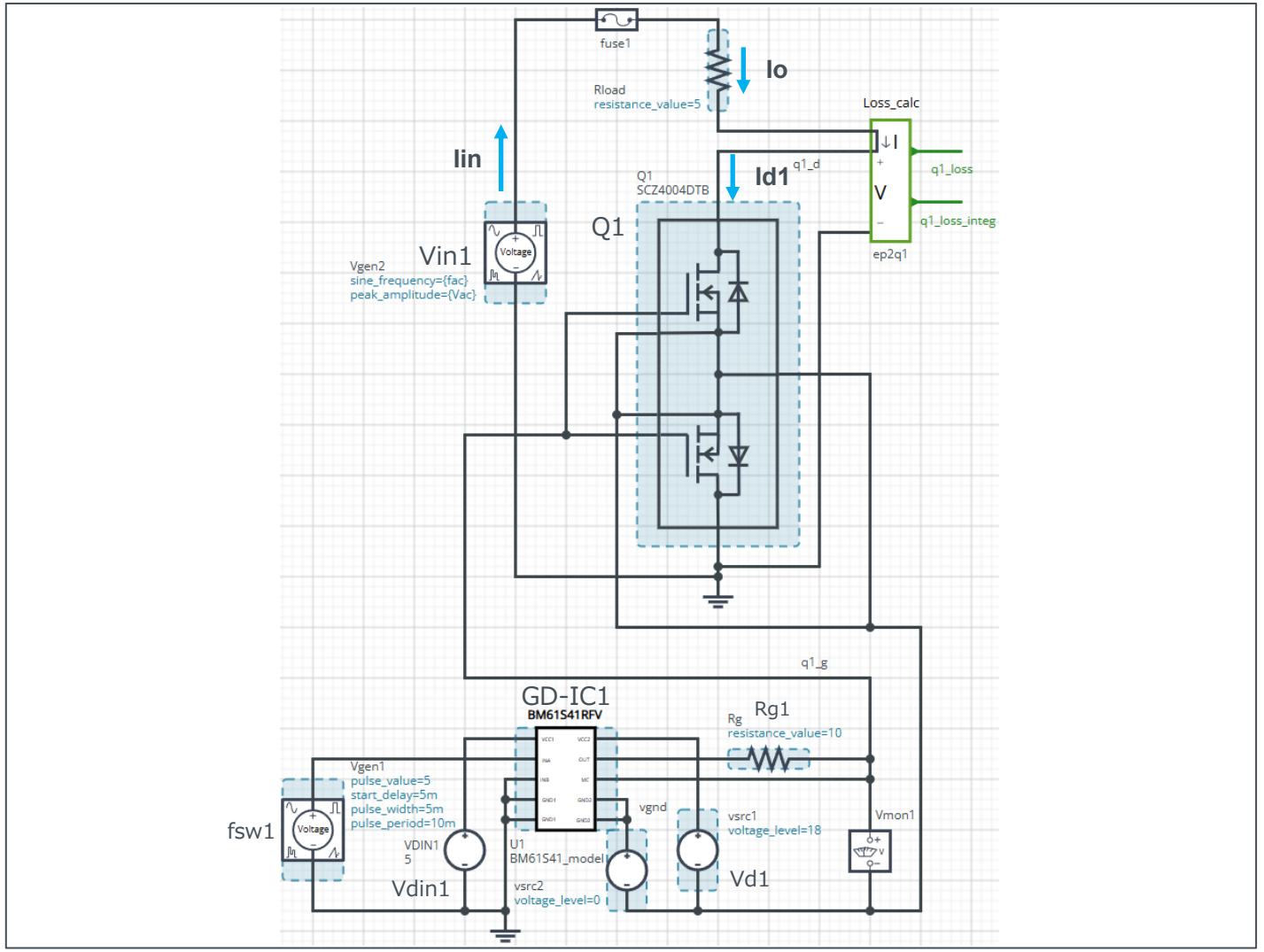
Simulation Parameters

Component name	Component	Default	Simulation Setting Range
Vin1	Input voltage	100Vac	
	Input frequency	50Hz	
Io	Output current	10Aac	
fsw1	Switching frequency	100Hz	
	Duty	50%	
Tj	Temperature	25°C	
Vd1	Gate drive voltage H	18V	10 – 20V
Vdin1	Signal voltage level	5V	

Devices

Component Name	Component	Default	Simulation Setting Range
Q1	SiC Power Module	Selectable	
GD-IC1	Gate Driver	Selectable	
Rg1	Gate resistor	10Ω	0 – 100Ω
Rload	Load resistor	5Ω	

Simulation Circuit



Note: The Loss_calc component is a utility module to support power loss calculation and does not affect the simulation results of circuit operation or performance.

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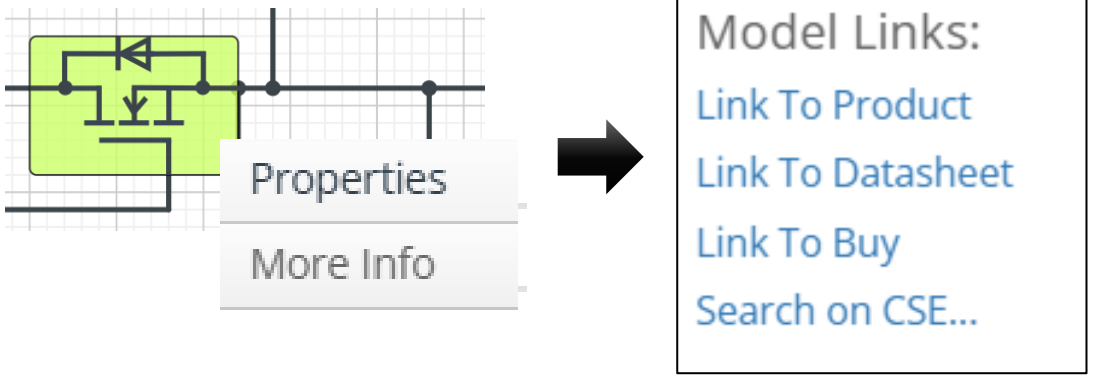
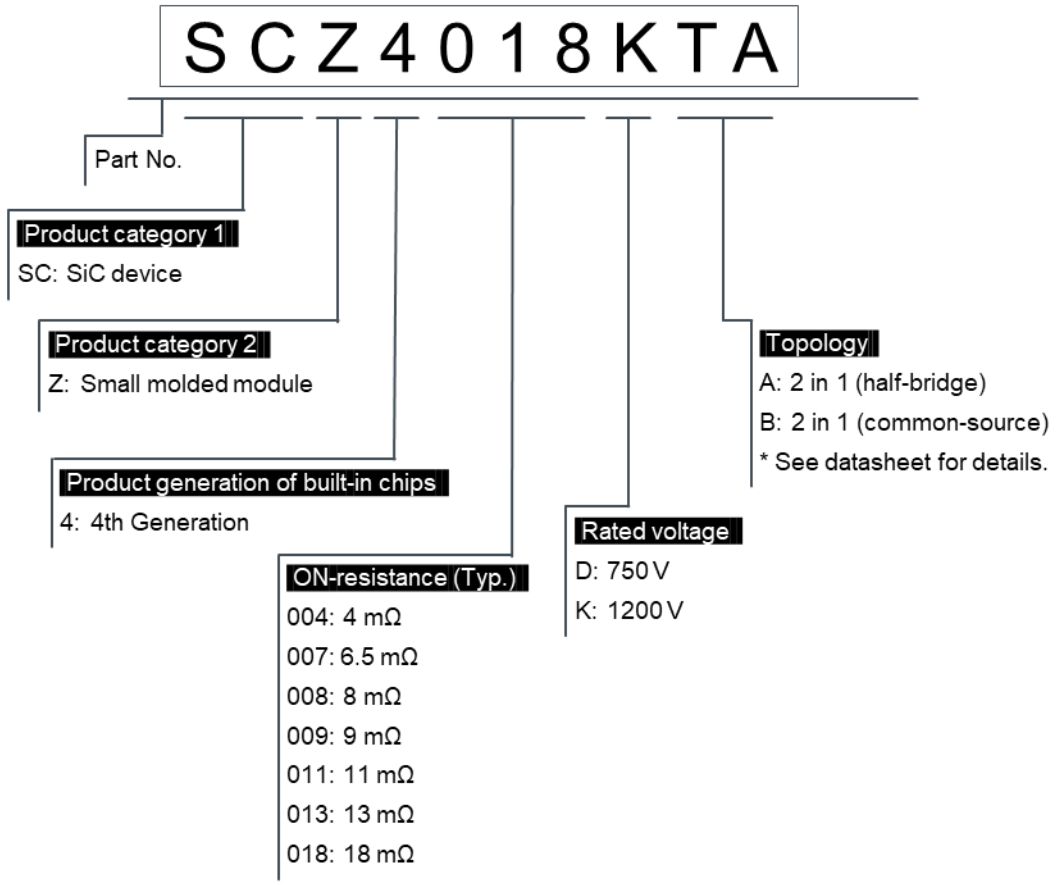
Selectable Devices

Component name	Component
Q1	SiC Power Module

For more information, go to **“More Info”** and click on **“Link to Datasheet”**.



SiC Power Module part number information



Product Lineup: SiC Power Module

Note) We have not been able to confirm operation with all combinations. Please read the disclaimer carefully.

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2026. May.
69UG014E Rev.001

Selectable Devices

Component name	Component	Product No.	feature
GD-IC1	Gate Driver	BM61S41RFV-C (*)	**for SiC MOSFET** Isolation Voltage : 3750 Vrms I/O Delay Time (max) : 65ns Miller Clamp : Built-in UVLO : 14.5V
		BM61M41RFV-C	**for SJ-MOS / IGBT** Isolation Voltage : 3750 Vrms I/O Delay Time (max) : 65ns Miller Clamp : Built-in UVLO : 7.4V

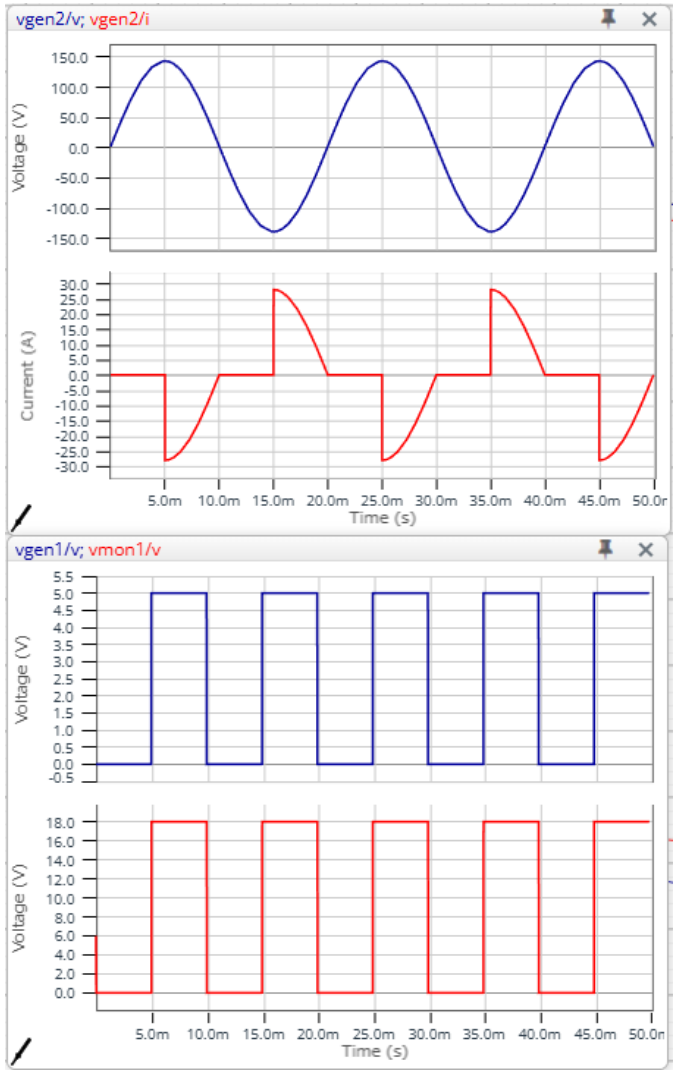
* Default device

Simulation Waveform

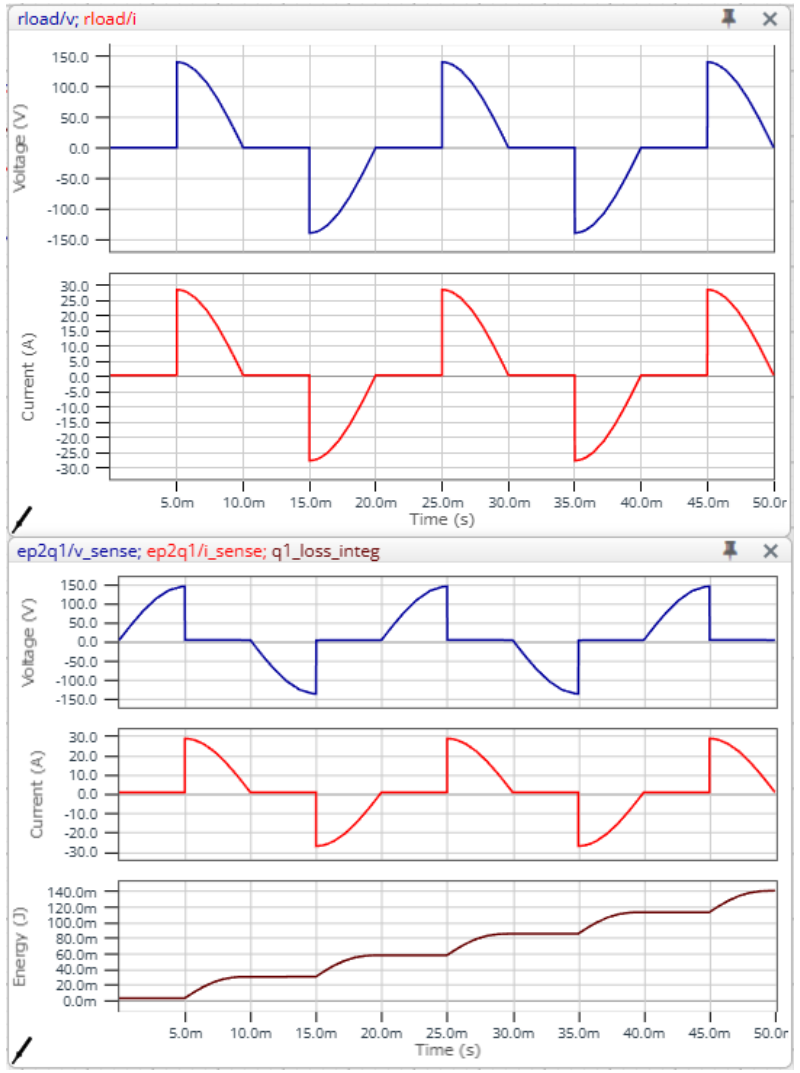
2026. May.
69UG014E Rev.001

Q1 : SiC Power Module
SCZ4004DTB

Vin, Iin / Vdin, Vgs (0～50ms)



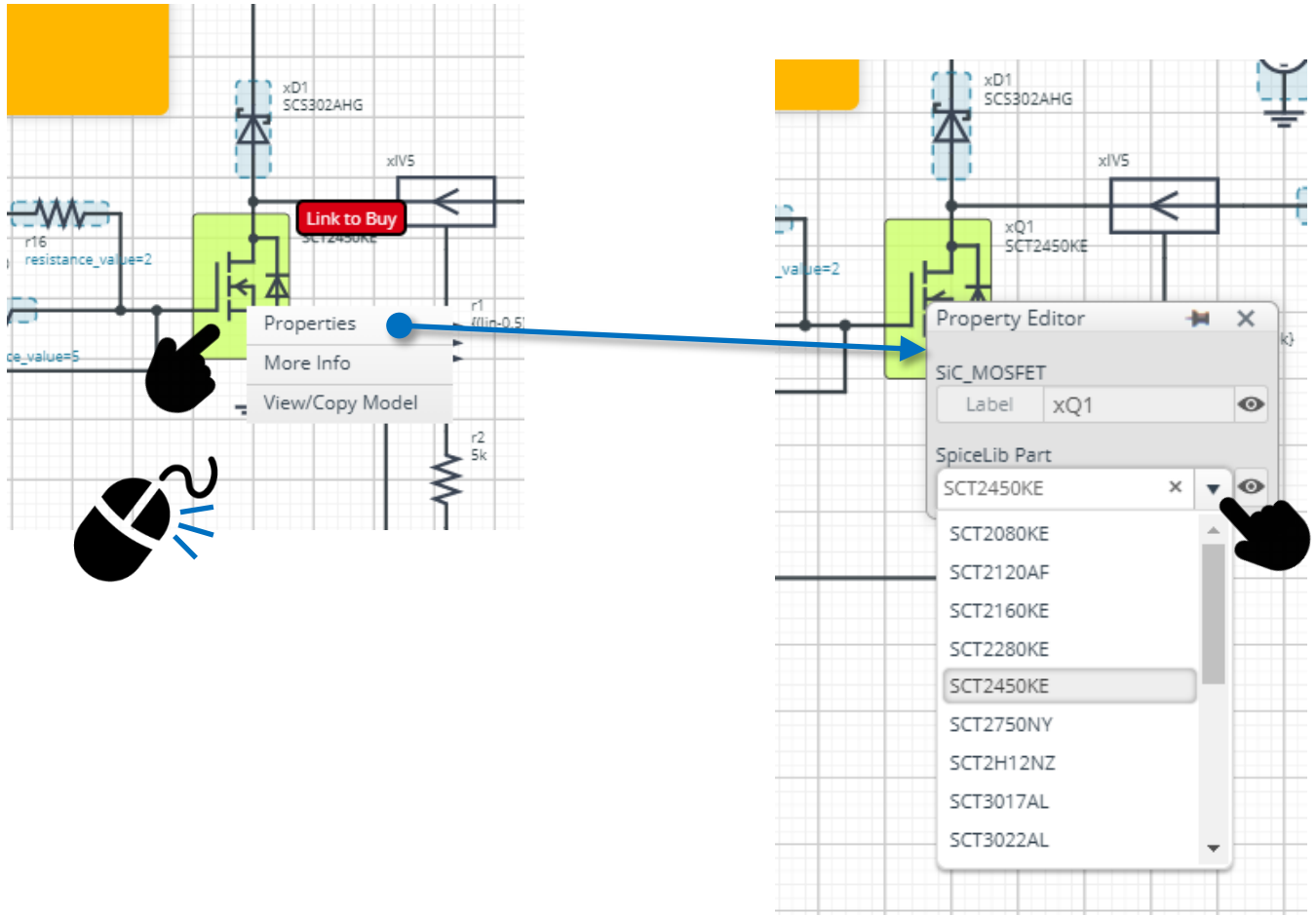
Vo, Io / Vds, Id, Eloss (0～50ms)



How to change the devices

2026. May.
69UG014E Rev.001

Right-click on the device ⇨ Select Properties ⇨ Pull down “SpiceLib Part” ⇨ Select the product

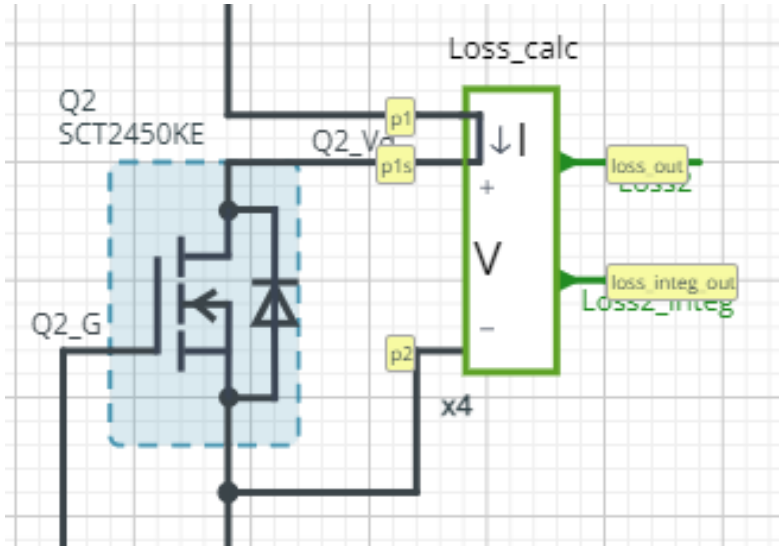


Loss Calculation Model

2026. May.
69UG014E Rev.001

Loss Calculation Model outputs the instantaneous value of power loss and its integration.

Loss calculation model 'Loss_calc'



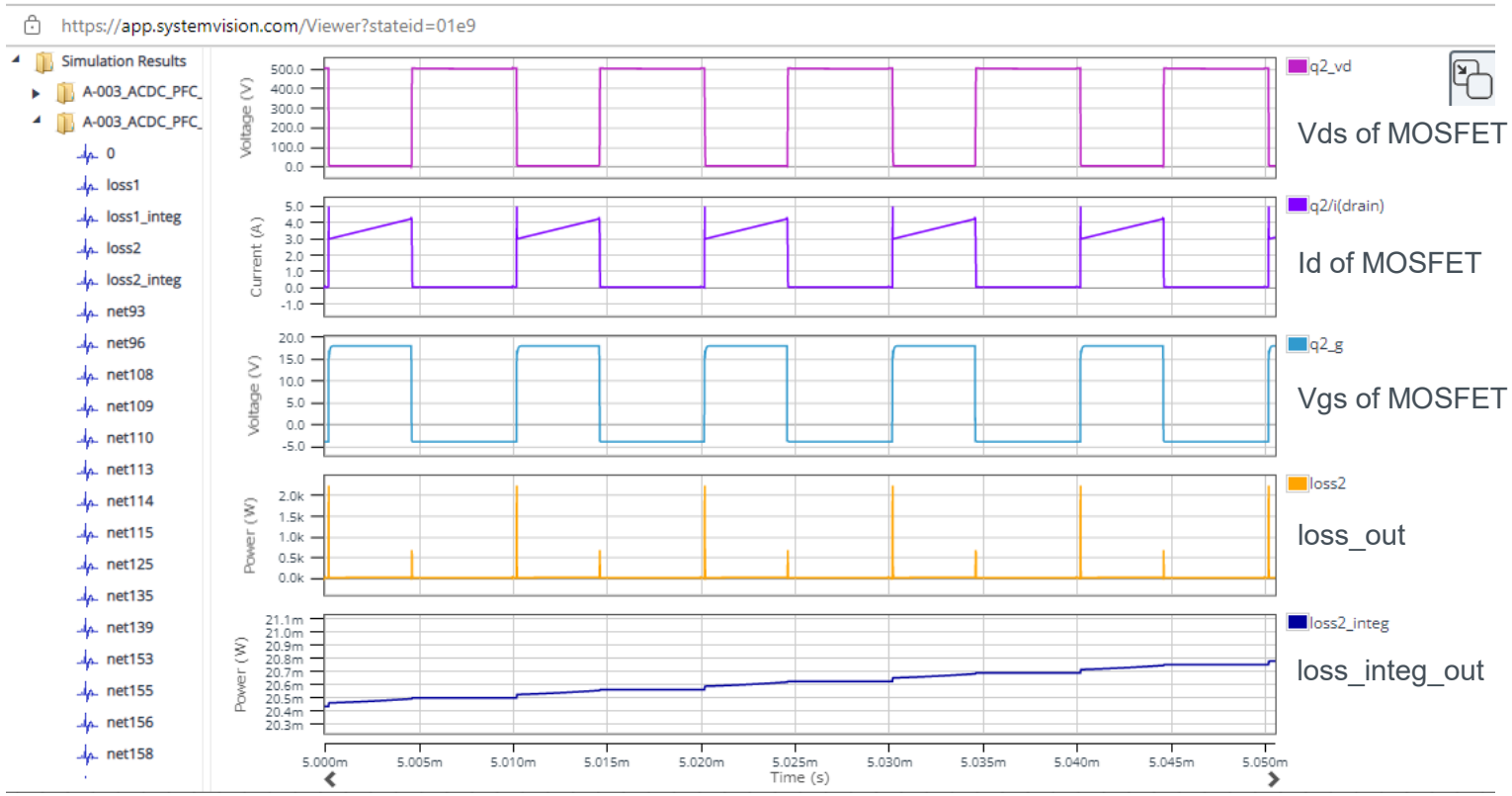
$$loss\_out(t) = I(t) \times V(t)$$

$$loss\_integ\_out = \int_0^t loss\_out(t)dt$$

I : Current through p1 to p1s

V : Voltage between p1s and p2

Waveform example



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